

CONTOUR360⁰

cutting tool technologies



PRODUCT CATALOG

CONTOUR360°

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YOURCUT360°

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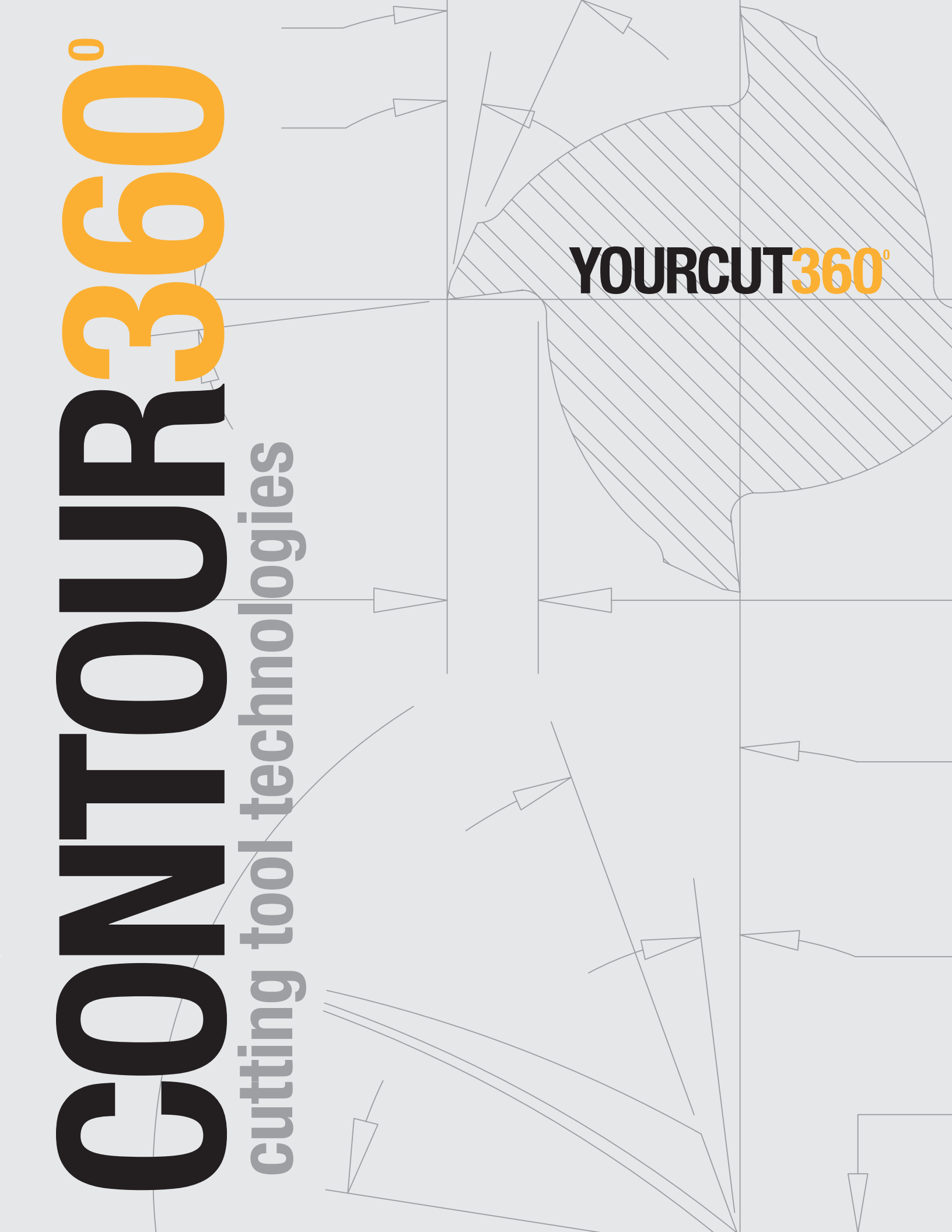
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YOURCUT360⁰

CONTOUR360⁰ has a proven track record of designing and building custom tooling required for difficult and extremely precise milling operations. Our solutions will solve the most difficult applications effectively and economically.

Every tool manufactured by CONTOUR360⁰ is engineered, designed, processed, and applied with meticulous attention to every detail. Our custom tool offering comes complete with state-of-the-art design capability, including 3D design software. We insure that there is complete understanding of the application and every aspect of the design communicated fully before we manufacture your tool.

CONTOUR360⁰ lead-time for custom tooling is among the best in the industry, insuring you have the tools you need to satisfy your market demands.

AT CONTOUR360⁰, WE BELIEVE THAT THE MOST IMPORTANT APPLICATION IS *YOURS*.

Our custom tool program includes:

- Modified standards
- Form tools
- Step tools
- Porting tools
- Chamfer tools
- Keyseat cutters
- Dovetail cutters
- Tapered tools
- Coolant thru tools
- Custom drills
- Custom reamers
- Step reamers
- Chamber reamers
- Custom PCD tools
- Carbide tipped cutting tools

WHAT DOES YOUR APPLICATION DEMAND... JUST ASK!

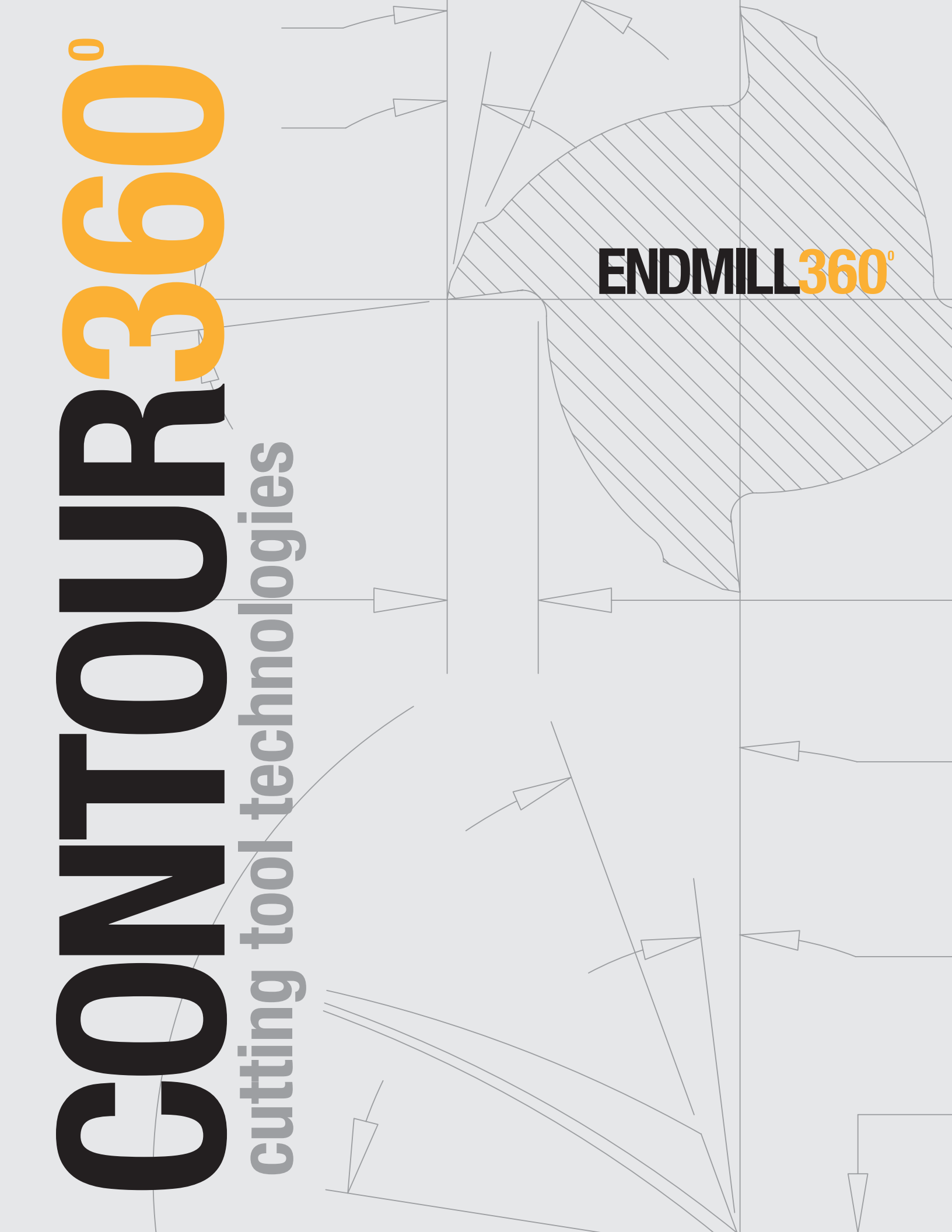
**VISIT OUR WEBSITE WWW.CONTOUR360.COM TO FILL OUT
AN ONLINE REQUEST FOR QUOTE**



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ENDMILL360°

The background of the entire page is a technical drawing of a 360-degree end mill. The drawing is centered on a coordinate system with a vertical and a horizontal axis. The end mill's profile is shown in the upper right quadrant, with its cutting edges extending into the other three quadrants. The cutting edges are represented by lines with small triangles at their tips, indicating the direction of the cutting process. The end mill's body is shaded with diagonal lines, and the cutting edges are highlighted with a different pattern of diagonal lines. The overall design is clean and professional, emphasizing the precision and versatility of the technology.

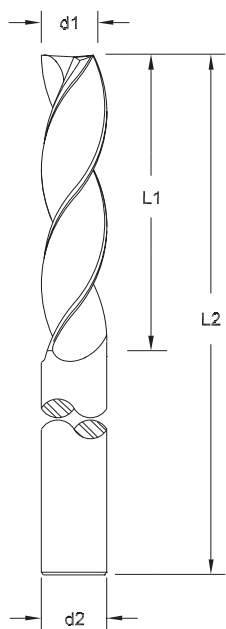


ALUMA-FLO, HIGH PERFORMANCE END MILLS FOR ALUMINUM

3 Flute, Variable Helix Solid Carbide End Mills

Designed specifically for aluminum and non-ferrous materials
Reduce cycle time - one tool for roughing and finishing
Promotes dynamic chip flow at high velocity
Coated with ZrN (Zirconium Nitride)

3 FLUTE - SQUARE & CORNER RADIUS



SLOTting
RAMPing
INTERPOLATING
PROFILING

CUTTING DIAMETER (d1)	SHANK DIAMETER (d2)	LENGTH OF CUT (L1)	OVERALL LENGTH (L2)	EDP SQUARE	1/64	1/32	1/16	RADIUS OPTIONS			
1/8	1/8	1/4	1-1/2	NC43S50	-016						
1/8	1/8	1/2	1-1/2	NC43050	-016						
3/16	3/16	5/16	2	NC43S58	-016	-031	-063				
3/16	3/16	5/8	2	NC43058	-016	-031	-063				
1/4	1/4	1/2	2	NC43S66	-016	-031	-063				
1/4	1/4	3/4	2-1/2	NC43066	-016	-031	-063				
1/4	1/4	1-1/4	3	NC43L66	-016	-031	-063				
5/16	5/16	13/16	2-1/2	NC43070	-016	-031	-063				
3/8	3/8	1/2	2	NC43S74	-016	-031	-063	-094			
3/8	3/8	1	2-1/2	NC43074	-016	-031	-063	-094			
3/8	3/8	1-1/2	3-1/2	NC43L74	-016	-031	-063	-094			
7/16	7/16	1	2-3/4	NC43078	-016	-031	-063	-094			
1/2	1/2	5/8	2-1/2	NC43S82	-016	-031	-063	-094	-125		
1/2	1/2	1	3	NC43082	-016	-031	-063	-094	-125		
1/2	1/2	1-1/4	3	NC43182	-016	-031	-063	-094	-125		
1/2	1/2	2	4	NC43L82	-016	-031	-063	-094	-125		
9/16	9/16	1-1/4	3	NC43083	-016	-031	-063	-094	-125		
5/8	5/8	7/8	3	NC43S84		-031	-063	-094	-125		
5/8	5/8	1-1/4	3-1/2	NC43084		-031	-063	-094	-125		
5/8	5/8	2-1/2	6	NC43L84		-031	-063	-094	-125		
3/4	3/4	1	3-1/2	NC43S86		-031	-063	-094	-125	-188	-250
3/4	3/4	1-1/2	4	NC43086		-031	-063	-094	-125	-188	-250
3/4	3/4	3	6	NC43L86		-031	-063	-094	-125	-188	-250
1	1	1	3-1/2	NC43S90		-031	-063	-094	-125	-188	-250
1	1	1-1/2	4	NC43090		-031	-063	-094	-125	-188	-250
1	1	3	6	NC43L90		-031	-063	-094	-125	-188	-250

Available with weldon flats



ENDMILL360⁰

cutting tool technologies

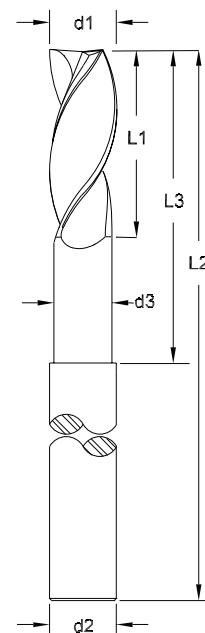
ALUMA-FLO, HIGH PERFORMANCE END MILLS FOR ALUMINUM

**3 Flute, Variable Helix, REDUCED NECK
Solid Carbide End Mills**

Designed specifically for aluminum and non-ferrous materials
Reduce cycle time - one tool for roughing and finishing
Promotes dynamic chip flow at high velocity
Reduced neck for extended length of reach
Coated with ZrN (Zirconium Nitride)

3 FLUTE - REDUCED NECK- SQUARE & CORNER RADIUS

CUTTING DIA. (d1)	SHANK DIA. (d2)	LENGTH OF CUT (L1)	LENGTH OF REACH (L3)	NECK DIA. (d3)	OVERALL LENGTH (L2)	EDP SQUARE	1/64	1/32	RADIUS OPTIONS				
1/8	1/8	5/32	3/8	.118	3	NCM8301	-016						
1/8	1/8	5/32	1/2	.118	3	NCM8303	-016						
1/8	1/8	5/32	5/8	.118	3	NCM8305	-016						
3/16	3/16	5/32	1/2	.178	3	NCM8311	-016	-031	-063				
3/16	3/16	7/32	3/4	.178	3	NCM8313	-016	-031	-063				
1/4	1/4	7/32	3/4	.237	4	NCM8321	-016	-031	-063				
1/4	1/4	3/8	1-1/8	.237	4	NCM8323	-016	-031	-063				
1/4	1/4	3/8	2-1/8	.237	4	NCM8325	-016	-031	-063				
3/8	3/8	3/8	1-1/8	.356	4	NCM8341	-016	-031	-063	-094			
3/8	3/8	1/2	2-3/8	.356	6	NCM8343	-016	-031	-063	-094			
3/8	3/8	1/2	3-3/8	.356	6	NCM8345	-016	-031	-063	-094			
3/8	3/8	1/2	4	.356	6	NCM8347	-016	-031	-063	-094			
1/2	1/2	5/8	1-3/8	.475	4	NCM8361	-016	-031	-063	-094	-125		
1/2	1/2	5/8	2-3/8	.475	6	NCM8363	-016	-031	-063	-094	-125		
1/2	1/2	5/8	3-3/8	.475	6	NCM8365	-016	-031	-063	-094	-125		
1/2	1/2	5/8	4-1/8	.475	6	NCM8367	-016	-031	-063	-094	-125		
5/8	5/8	3/4	1-5/8	.593	4	NCM8371		-031	-063	-094	-125		
5/8	5/8	3/4	2-3/8	.593	6	NCM8373		-031	-063	-094	-125		
5/8	5/8	3/4	3-3/8	.593	6	NCM8375		-031	-063	-094	-125		
5/8	5/8	3/4	4-1/8	.593	6	NCM8377		-031	-063	-094	-125		
3/4	3/4	1	2-1/2	.712	6	NCM8381		-031	-063	-094	-125	-188	-250
3/4	3/4	1	3-3/8	.712	6	NCM8383		-031	-063	-094	-125	-188	-250
3/4	3/4	1	4-1/8	.712	6	NCM8385		-031	-063	-094	-125	-188	-250
1	1	1-1/4	2-1/2	.950	6	NCM8391		-031	-063	-094	-125	-188	-250
1	1	1-1/4	3-3/8	.950	6	NCM8393		-031	-063	-094	-125	-188	-250
1	1	1-1/4	4-1/8	.950	6	NCM8395		-031	-063	-094	-125	-188	-250



SLOTting
RAMPing
INTERPOLATING
PROFILING

Available with weldon flats



MULTI-MILL HIGH PERFORMANCE END MILLS

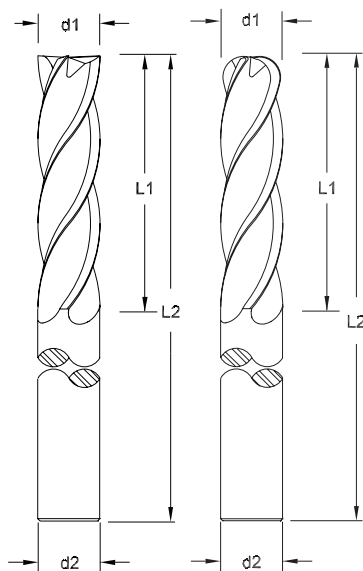
4 Flute, Variable Helix Solid Carbide End Mills

Reduce roughing and finishing cycle time
Achieve superior surface finish at high feed rates
Increased metal removal rates due to heavier chipload
Designed for: Titanium • Stainless steel • Inconel • Cast iron • Carbon steels • High temp alloys
Coated with AlTiN (Aluminum Titanium Nitride)

4 FLUTE - SQUARE & BALL

CUTTING DIAMETER (d1)	SHANK DIAMETER (d2)	LENGTH OF CUT (L1)	OVERALL LENGTH (L2)	EDP SQUARE	EDP BALL
1/8	1/8	1/2	2	NCM4010	NCM6010
3/16	3/16	9/16	2	NCM4012	NCM6012
1/4	1/4	3/4	2-1/2	NCM4016	NCM6016
5/16	5/16	13/16	2-1/2	NCM4020	NCM6020
3/8	3/8	1	2-1/2	NCM4024	NCM6024
7/16	7/16	1	2-3/4	NCM4028	NCM6028
1/2	1/2	1	3	NCM4030	
1/2	1/2	1-1/4	3	NCM4032	NCM6032
5/8	5/8	1-5/8	3-1/2	NCM4034	NCM6034
3/4	3/4	1-5/8	4	NCM4036	NCM6036
3/4	3/4	2-1/4	5	NCM4037	NCM6037
1	1	2	4	NCM4040	NCM6040
1	1	2-1/2	5	NCM4041	

Available with weldon flats



SLOTting
RAMPing
INTERPOLATING
PROFILING

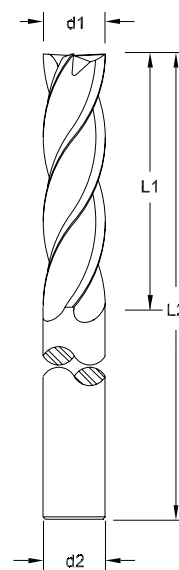


MULTI-MILL HIGH PERFORMANCE END MILLS

**4 Flute, Variable Helix
Solid Carbide End Mills**

4 FLUTE - CORNER RADIUS

CUTTING DIAMETER (d1)	SHANK DIAMETER (d2)	LENGTH OF CUT (L1)	OVERALL LENGTH (L2)	EDP	RADIUS OPTIONS						
					1/64	1/32	1/16	3/32	1/8	3/16	1/4
1/8	1/8	1/4	1-1/2	NCM1010	-016						
1/8	1/8	1/2	2	NCM4102	-016						
3/16	3/16	1/4	2	NCM1012	-016	-031	-063				
3/16	3/16	9/16	2	NCM4104	-016	-031	-063				
1/4	1/4	3/8	2	NCM1016	-016	-031	-063				
1/4	1/4	3/4	2-1/2	NCM4108	-016	-031	-063				
7/32	1/4	5/8	2-1/2	NCM4106	-016	-031	-063				
5/16	5/16	7/16	2	NCM1020	-016	-031	-063				
5/16	5/16	13/16	2-1/2	NCM4112	-016	-031	-063				
3/8	3/8	1/2	2	NCM1024	-016	-031	-063	-094			
3/8	3/8	1	2-1/2	NCM4116	-016	-031	-063	-094			
3/8	3/8	2	4	NCM4117	-016	-031	-063	-094			
3/8	3/8	3	6	NCM4175	-016	-031	-063	-094			
7/16	7/16	9/16	2-1/2	NCM1028	-016	-031	-063	-094			
7/16	7/16	1	2-3/4	NCM4118	-016	-031	-063	-094			
1/2	1/2	5/8	2-1/2	NCM1032	-016	-031	-063	-094	-125		
1/2	1/2	1	3	NCM4120	-016	-031	-063	-094	-125		
1/2	1/2	1-1/4	3	NCM4122	-016	-031	-063	-094	-125		
1/2	1/2	2	4	NCM4123	-016	-031	-063	-094	-125		
1/2	1/2	3	6	NCM4124	-016	-031	-063	-094	-125		
5/8	5/8	3/4	3	NCM1034		-031	-063	-094	-125		
5/8	5/8	1-5/8	3-1/2	NCM4129		-031	-063	-094	-125		
5/8	5/8	3	6	NCM4130		-031	-063	-094	-125		
3/4	3/4	1	3	NCM1036		-031	-063	-094	-125	-188	-250
3/4	3/4	1-5/8	4	NCM4135		-031	-063	-094	-125	-188	-250
3/4	3/4	2-1/4	5	NCM4149		-031	-063	-094	-125	-188	-250
3/4	3/4	3	6	NCM4136		-031	-063	-094	-125	-188	-250
3/4	3/4	4	7	NCM4137		-031	-063	-094	-125	-188	-250
1	1	1-1/4	3	NCM1040		-031	-063	-094	-125	-188	-250
1	1	1-1/2	4	NCM1041		-031	-063	-094	-125	-188	-250
1	1	2	4	NCM4143		-031	-063	-094	-125	-188	-250
1	1	2	5	NCM4148		-031	-063	-094	-125	-188	-250
1	1	2-1/2	5	NCM4146		-031	-063	-094	-125	-188	-250
1	1	3	6	NCM4144		-031	-063	-094	-125	-188	-250
1	1	4	7	NCM4145		-031	-063	-094	-125	-188	-250



Available with weldon flats

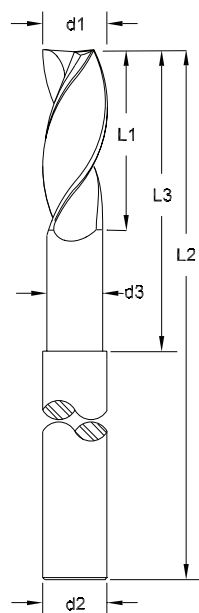


MULTI-MILL HIGH PERFORMANCE END MILLS

4 Flute, Variable Helix, REDUCED NECK Solid Carbide End Mills

Reduce roughing and finishing cycle time
Achieve superior surface finish at high feed rates
Increased metal removal rates due to heavier chipload
Designed for: Titanium • Stainless steel • Inconel • Cast iron • Carbon steels • High temp alloys
Reduced neck for extended length of reach
Coated with AlTiN (Aluminum Titanium Nitride)

4 FLUTE - REDUCED NECK - BALL, SQUARE & CORNER RADIUS



SLOTting
RAMPing
INTERPOLATING
PROFILING

CUTTING DIA. (d1)	SHANK DIA. (d2)	LENGTH OF CUT (L1)	LENGTH OF REACH (L3)	NECK DIA. (d3)	OVERALL LENGTH (L2)	EDP BALL	EDP SQUARE	RADIUS OPTIONS						
								1/64	1/32	1/16	1/32	1/8	3/16	1/4
1/8	1/8	5/32	3/8	.118	3	NCM8501	NCM8401	-016						
1/8	1/8	5/32	1/2	.118	3	NCM8503	NCM8403	-016						
1/8	1/8	5/32	5/8	.118	3	NCM8505	NCM8405	-016						
3/16	3/16	5/32	1/2	.178	3	NCM8511	NCM8411	-016	-031	-063				
3/16	3/16	7/32	3/4	.178	3	NCM8513	NCM8413	-016	-031	-063				
1/4	1/4	7/32	3/4	.237	4	NCM8521	NCM8421	-016	-031	-063				
1/4	1/4	3/8	1-1/8	.237	4	NCM8523	NCM8423	-016	-031	-063				
1/4	1/4	3/8	2-1/8	.237	4	NCM8525	NCM8425	-016	-031	-063				
3/8	3/8	3/8	1-1/8	.356	4	NCM8541	NCM8441	-016	-031	-063	-094			
3/8	3/8	1/2	2-3/8	.356	6	NCM8543	NCM8443	-016	-031	-063	-094			
3/8	3/8	1/2	3-3/8	.356	6	NCM8545	NCM8445	-016	-031	-063	-094			
3/8	3/8	1/2	4	.356	6	NCM8547	NCM8447	-016	-031	-063	-094			
1/2	1/2	5/8	1-3/8	.475	4	NCM8561	NCM8461	-016	-031	-063	-094	-125		
1/2	1/2	5/8	2-3/8	.475	6	NCM8563	NCM8463	-016	-031	-063	-094	-125		
1/2	1/2	5/8	3-3/8	.475	6	NCM8565	NCM8465	-016	-031	-063	-094	-125		
1/2	1/2	5/8	4-1/8	.475	6	NCM8567	NCM8467	-016	-031	-063	-094	-125		
5/8	5/8	3/4	1-5/8	.593	4	NCM8571	NCM8471		-031	-063	-094	-125		
5/8	5/8	3/4	2-3/8	.593	6	NCM8573	NCM8473		-031	-063	-094	-125		
5/8	5/8	3/4	3-3/8	.593	6	NCM8575	NCM8475		-031	-063	-094	-125		
5/8	5/8	3/4	4-1/8	.593	6	NCM8577	NCM8477		-031	-063	-094	-125		
3/4	3/4	1	2-1/2	.712	6	NCM8581	NCM8481		-031	-063	-094	-125	-188	-250
3/4	3/4	1	3-3/8	.712	6	NCM8583	NCM8483		-031	-063	-094	-125	-188	-250
3/4	3/4	1	4-1/8	.712	6	NCM8585	NCM8485		-031	-063	-094	-125	-188	-250
1	1	1-1/4	2-1/2	.950	6	NCM8591	NCM8491		-031	-063	-094	-125	-188	-250
1	1	1-1/4	3-3/8	.950	6	NCM8593	NCM8493		-031	-063	-094	-125	-188	-250
1	1	1-1/4	4-1/8	.950	6	NCM8595	NCM8495		-031	-063	-094	-125	-188	-250

Available with weldon flats



ENDMILL360⁰

cutting tool technologies

MULTI-MILL HIGH PERFORMANCE END MILLS

5 Flute, Variable Helix Solid Carbide End Mills

Reduce finishing cycle time

Achieve superior surface finish at high feed rates

Increased metal removal rates due to heavier chipload

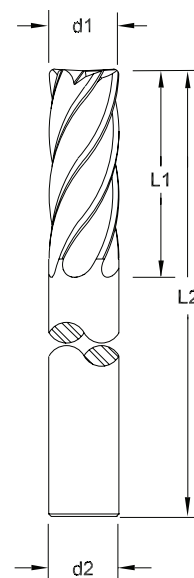
Designed for: Titanium • Stainless steel • Inconel • Cast iron • Carbon steels • High temp alloys

Coated with AlTiN (Aluminum Titanium Nitride)

5 FLUTE - SQUARE

CUTTING DIAMETER (d1)	SHANK DIAMETER (d2)	LENGTH OF CUT (L1)	OVERALL LENGTH (L2)	EDP SQUARE
1/4	1/4	3/8	2	NCM4502
1/4	1/4	5/8	2-1/2	NCM4505
1/4	1/4	3/4	2-1/2	NCM4506
5/16	5/16	13/16	2-1/2	NCM4508
3/8	3/8	1/2	2	NCM4511
3/8	3/8	1	2-1/2	NCM4514
3/8	3/8	2	4	NCM4515
7/16	7/16	1	2-3/4	NCM4517
1/2	1/2	5/8	2-1/2	NCM4520
1/2	1/2	1	3	NCM4523
1/2	1/2	1-1/4	3	NCM4524
1/2	1/2	2	4	NCM4525
5/8	5/8	3/4	3	NCM4526
5/8	5/8	1-1/4	3-1/2	NCM4529
5/8	5/8	1-5/8	3-1/2	NCM4530
3/4	3/4	7/8	3	NCM4532
3/4	3/4	1-1/2	4	NCM4535
3/4	3/4	1-5/8	4	NCM4536
3/4	3/4	2-1/4	5	NCM4542
3/4	3/4	4	7	NCM4537
1	1	1-1/2	4	NCM4538
1	1	2-1/2	5	NCM4539
1	1	3	6	NCM4540
1	1	4	7	NCM4541

Available with weldon flats



SLOTting
RAMPing
INTERPOLATING
PROFILING



MULTI-MILL HIGH PERFORMANCE END MILLS

5 Flute, Variable Helix Solid Carbide End Mills

Reduce finishing cycle time

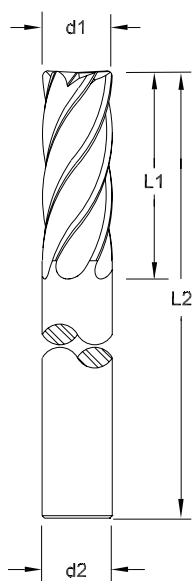
Achieve superior surface finish at high feed rates

Increased metal removal rates due to heavier chipload

Designed for: Titanium • Stainless steel • Inconel • Cast iron • Carbon steels • High temp alloys

Coated with AlTiN (Aluminum Titanium Nitride)

5 FLUTE - CORNER RADIUS



CUTTING DIAMETER (d1)	SHANK DIAMETER (d2)	LENGTH OF CUT (L1)	OVERALL LENGTH (L2)	EDP	RADIUS OPTIONS						
					1/64	1/32	1/16	3/32	1/8	3/16	1/4
1/4	1/4	3/8	2	NCM4550	-016	-031	-063				
1/4	1/4	5/8	2-1/2	NCM4552	-016	-031	-063				
1/4	1/4	1-1/4	3	NCM4554	-016	-031	-063				
1/4	1/4	5/8	4	NCM4556	-016	-031	-063				
5/16	5/16	13/16	2-1/2	NCM4558	-016	-031	-063				
3/8	3/8	1/2	2	NCM4560	-016	-031	-063	-094			
3/8	3/8	1	2-1/2	NCM4562	-016	-031	-063	-094			
3/8	3/8	1-1/4	3	NCM4564	-016	-031	-063	-094			
3/8	3/8	7/8	4	NCM4566	-016	-031	-063	-094			
7/16	7/16	1	2-3/4	NCM4568	-016	-031	-063	-094	-125		
1/2	1/2	5/8	2-1/2	NCM4570	-016	-031	-063	-094	-125		
1/2	1/2	1	3	NCM4572	-016	-031	-063	-094	-125		
1/2	1/2	1-1/4	3	NCM4574	-016	-031	-063	-094	-125		
1/2	1/2	2	4	NCM4576	-016	-031	-063	-094	-125		
1/2	1/2	1	6	NCM4578	-016	-031	-063	-094	-125		
5/8	5/8	3/4	3	NCM4580		-031	-063	-094	-125		
5/8	5/8	1-1/4	3-1/2	NCM4582		-031	-063	-094	-125		
5/8	5/8	2-1/4	5	NCM4584		-031	-063	-094	-125		
5/8	5/8	1-1/4	6	NCM4586		-031	-063	-094	-125		
3/4	3/4	7/8	3	NCM4588		-031	-063	-094	-125	-188	-250
3/4	3/4	1-1/2	4	NCM4590		-031	-063	-094	-125	-188	-250
3/4	3/4	2-1/4	5	NCM4592		-031	-063	-094	-125	-188	-250
3/4	3/4	1-1/2	6	NCM4594		-031	-063	-094	-125	-188	-250
1	1	1-1/2	4	NCM4596		-031	-063	-094	-125	-188	-250
1	1	2-1/2	5	NCM4598		-031	-063	-094	-125	-188	-250

SLOTting
RAMPing
INTERPOLATING
PROFILING

Available with weldon flats



MULTI-MILL HIGH PERFORMANCE END MILLS

7 Flute, Variable Helix Solid Carbide End Mills

Ideal solution for light finish cuts

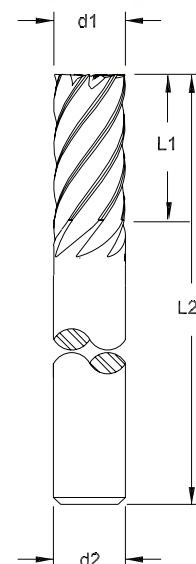
7 flute design achieves superior surface finish at high feed rates

Designed for: Titanium • Stainless steel • Inconel • Cast iron • Carbon steels • High temp alloys

Coated with AlTiN (Aluminum Titanium Nitride)

7 FLUTE - SQUARE AND CORNER RADIUS

CUTTING DIAMETER (d1)	SHANK DIAMETER (d2)	LENGTH OF CUT (L1)	OVERALL LENGTH (L2)	EDP SQUARE	RADIUS OPTIONS						
					1/64	1/32	1/16	3/32	1/8	3/16	1/4
1/4	1/4	3/8	2	NCM7010	-016	-031	-063				
1/4	1/4	3/4	2-1/2	NCM7013	-016	-031	-063				
1/4	1/4	1-1/8	3	NCM7016	-016	-031	-063				
5/16	5/16	1/2	2	NCM7020	-016	-031	-063				
5/16	5/16	13/16	2-1/2	NCM7023	-016	-031	-063				
5/16	5/16	1-1/8	3	NCM7026	-016	-031	-063	-094			
3/8	3/8	9/16	2	NCM7030	-016	-031	-063	-094			
3/8	3/8	1	2-1/2	NCM7033	-016	-031	-063	-094			
3/8	3/8	1-1/2	3-1/2	NCM7036	-016	-031	-063	-094			
3/8	3/8	2	4	NCM7039	-016	-031	-063	-094	-125		
7/16	7/16	9/16	2-3/4	NCM7040	-016	-031	-063	-094	-125		
7/16	7/16	1	2-3/4	NCM7043	-016	-031	-063	-094	-125		
7/16	7/16	2	4	NCM7046	-016	-031	-063	-094	-125		
1/2	1/2	3/4	3	NCM7050	-016	-031	-063	-094	-125		
1/2	1/2	1	3	NCM7053	-016	-031	-063	-094	-125		
1/2	1/2	1-1/2	4	NCM7056		-031	-063	-094	-125		
1/2	1/2	2	4	NCM7059		-031	-063	-094	-125		
5/8	5/8	3/4	3	NCM7060		-031	-063	-094	-125		
5/8	5/8	1-5/8	4	NCM7063		-031	-063	-094	-125		
5/8	5/8	2-1/4	5	NCM7066		-031	-063	-094	-125	-188	-250
3/4	3/4	7/8	3	NCM7070		-031	-063	-094	-125	-188	-250
3/4	3/4	1-5/8	4	NCM7073		-031	-063	-094	-125	-188	-250
3/4	3/4	2-1/4	5	NCM7076		-031	-063	-094	-125	-188	-250
3/4	3/4	3-1/4	6	NCM7079		-031	-063	-094	-125	-188	-250
1	1	1-1/2	4	NCM7080		-031	-063	-094	-125	-188	-250
1	1	2-1/2	5	NCM7083		-031	-063	-094	-125	-188	-250
1	1	3-1/4	6	NCM7086		-031	-063	-094	-125	-188	-250
1	1	4-1/4	7	NCM7089		-031	-063	-094	-125	-188	-250



INTERPOLATING
PROFILING

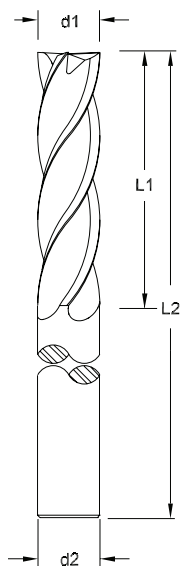
Available with weldon flats



GENERAL PURPOSE END MILLS

2 and 4 Flute, 30 Degree Helix, Center Cutting
Solid Carbide End Mills

2 & 4 FLUTE - STANDARD LENGTH - SQUARE



SLOTting
RAMPing
INTERPOLATING
PROFILING

CUTTING DIAMETER (d1)	SHANK DIAMETER (d2)	LENGTH OF CUT (L1)	OVERALL LENGTH (L2)	2 FLUTE			4 FLUTE		
				UNCOATED	TiCN	AlTiN	UNCOATED	TiCN	AlTiN
1/32	1/8	3/32	1-1/2	NC42002	NC42002T	NC42002A	NC44002	NC44002T	NC44002A
3/64	1/8	1/8	1-1/2	NC42003	NC42003T	NC42003A	NC44003	NC44003T	NC44003A
1/16	1/8	3/16	1-1/2	NC42004	NC42004T	NC42004A	NC44004	NC44004T	NC44004A
5/64	1/8	3/16	1-1/2	NC42005	NC42005T	NC42005A	NC44005	NC44005T	NC44005A
3/32	1/8	3/8	1-1/2	NC42006	NC42006T	NC42006A	NC44006	NC44006T	NC44006A
7/64	1/8	3/8	1-1/2	NC42007	NC42007T	NC42007A	NC44007	NC44007T	NC44007A
1/8	1/8	1/2	1-1/2	NC42008	NC42008T	NC42008A	NC44008	NC44008T	NC44008A
9/64	3/16	9/16	2	NC42009	NC42009T	NC42009A	NC44009	NC44009T	NC44009A
5/32	3/16	9/16	2	NC42010	NC42010T	NC42010A	NC44010	NC44010T	NC44010A
11/64	3/16	9/16	2	NC42011	NC42011T	NC42011A	NC44011	NC44011T	NC44011A
3/16	3/16	5/8	2	NC42012	NC42012T	NC42012A	NC44012	NC44012T	NC44012A
13/64	1/4	5/8	2-1/2	NC42013	NC42013T	NC42013A	NC44013	NC44013T	NC44013A
7/32	1/4	5/8	2-1/2	NC42014	NC42014T	NC42014A	NC44014	NC44014T	NC44014A
15/64	1/4	3/4	2-1/2	NC42015	NC42015T	NC42015A	NC44015	NC44015T	NC44015A
1/4	1/4	3/4	2-1/2	NC42016	NC42016T	NC42016A	NC44016	NC44016T	NC44016A
17/64	5/16	7/8	2-1/2	NC42017	NC42017T	NC42017A	NC44017	NC44017T	NC44017A
9/32	5/16	7/8	2-1/2	NC42018	NC42018T	NC42018A	NC44018	NC44018T	NC44018A
19/64	5/16	7/8	2-1/2	NC42019	NC42019T	NC42019A	NC44019	NC44019T	NC44019A
5/16	5/16	7/8	2-1/2	NC42020	NC42020T	NC42020A	NC44020	NC44020T	NC44020A
21/64	3/8	7/8	2-1/2	NC42021	NC42021T	NC42021A	NC44021	NC44021T	NC44021A
11/32	3/8	7/8	2-1/2	NC42022	NC42022T	NC42022A	NC44022	NC44022T	NC44022A
23/64	3/8	7/8	2-1/2	NC42023	NC42023T	NC42023A	NC44023	NC44023T	NC44023A
3/8	3/8	7/8	2-1/2	NC42024	NC42024T	NC42024A	NC44024	NC44024T	NC44024A
7/16	7/16	1	2-3/4	NC42028	NC42028T	NC42028A	NC44028	NC44028T	NC44028A
1/2	1/2	1	3	NC42032	NC42032T	NC42032A	NC44032	NC44032T	NC44032A
5/8	5/8	1-1/4	3-1/2	NC42034	NC42034T	NC42034A	NC44034	NC44034T	NC44034A
3/4	3/4	1-1/2	4	NC42036	NC42036T	NC42036A	NC44036	NC44036T	NC44036A
7/8	7/8	1-1/2	4	NC42038	NC42038T	NC42038A	NC44038	NC44038T	NC44038A
1	1	1-1/2	4	NC42040	NC42040T	NC42040A	NC44040	NC44040T	NC44040A

Available with weldon flats



ENDMILL^{360°}

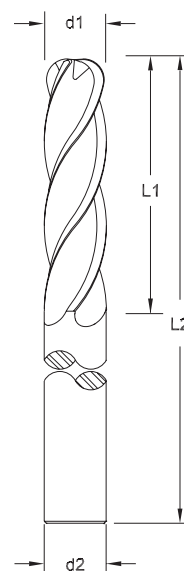
cutting tool technologies

GENERAL PURPOSE END MILLS

2 and 4 Flute, 30 Degree Helix, Center Cutting
Solid Carbide End Mills

2 & 4 FLUTE - STANDARD LENGTH - BALL

CUTTING DIAMETER (d1)	SHANK DIAMETER (d2)	LENGTH OF CUT (L1)	OVERALL LENGTH (L2)	2 FLUTE			4 FLUTE		
				UNCOATED	TiCN	AlTiN	UNCOATED	TiCN	AlTiN
1/32	1/8	3/32	1-1/2				NC64002	NC64002T	NC64002A
3/64	1/8	1/8	1-1/2				NC64003	NC64003T	NC64003A
1/16	1/8	3/16	1-1/2	NC62004	NC62004T	NC62004A	NC64004	NC64004T	NC64004A
5/64	1/8	3/16	1-1/2	NC62005	NC62005T	NC62005A	NC64005	NC64005T	NC64005A
3/32	1/8	3/8	1-1/2	NC62006	NC62006T	NC62006A	NC64006	NC64006T	NC64006A
7/64	1/8	3/8	1-1/2	NC62007	NC62007T	NC62007A	NC64007	NC64007T	NC64007A
1/8	1/8	1/2	1-1/2	NC62008	NC62008T	NC62008A	NC64008	NC64008T	NC64008A
9/64	3/16	9/16	2	NC62009	NC62009T	NC62009A	NC64009	NC64009T	NC64009A
5/32	3/16	9/16	2	NC62010	NC62010T	NC62010A	NC64010	NC64010T	NC64010A
11/64	3/16	9/16	2	NC62011	NC62011T	NC62011A	NC64011	NC64011T	NC64011A
3/16	3/16	5/8	2	NC62012	NC62012T	NC62012A	NC64012	NC64012T	NC64012A
13/64	1/4	5/8	2-1/2				NC64013	NC64013T	NC64013A
7/32	1/4	5/8	2-1/2				NC64014	NC64014T	NC64014A
15/64	1/4	3/4	2-1/2				NC64015	NC64015T	NC64015A
1/4	1/4	3/4	2-1/2	NC62016	NC62016T	NC62016A	NC64016	NC64016T	NC64016A
17/64	5/16	7/8	2-1/2				NC64017	NC64017T	NC64017A
9/32	5/16	7/8	2-1/2				NC64018	NC64018T	NC64018A
19/64	5/16	7/8	2-1/2				NC64019	NC64019T	NC64019A
5/16	5/16	7/8	2-1/2	NC62020	NC62020T	NC62020A	NC64020	NC64020T	NC64020A
21/64	3/8	7/8	2-1/2				NC64021	NC64021T	NC64021A
11/32	3/8	7/8	2-1/2				NC64022	NC64022T	NC64022A
23/64	3/8	7/8	2-1/2				NC64023	NC64023T	NC64023A
3/8	3/8	7/8	2-1/2	NC62024	NC62024T	NC62024A	NC64024	NC64024T	NC64024A
7/16	7/16	1	2-3/4	NC62028	NC62028T	NC62028A	NC64028	NC64028T	NC64028A
1/2	1/2	1	3	NC62032	NC62032T	NC62032A	NC64032	NC64032T	NC64032A
5/8	5/8	1-1/4	3-1/2	NC62034	NC62034T	NC62034A	NC64034	NC64034T	NC64034A
3/4	3/4	1-1/2	4	NC62036	NC62036T	NC62036A	NC64036	NC64036T	NC64036A
1	1	1-1/2	4	NC62040	NC62040T	NC62040A	NC64040	NC64040T	NC64040A



SLOTting
INTERPOLATING
PROFILING

Available with weldon flats

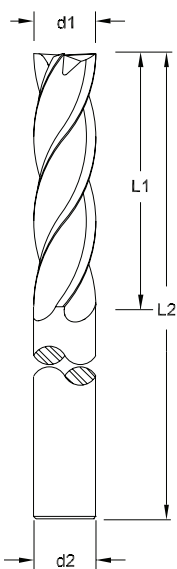


GENERAL PURPOSE END MILLS

2 and 4 Flute, 30 Degree Helix, Center Cutting
Solid Carbide End Mills



2 & 4 FLUTE - STANDARD LENGTH - CORNER RADIUS



CUTTING DIAMETER (d1)	SHANK DIAMETER (d2)	LENGTH OF CUT (L1)	OVERALL LENGTH (L2)	RADIUS SIZE	2 FLUTE			4 FLUTE		
					UNCOATED	TiCN	ALTiN	UNCOATED	TiCN	ALTiN
1/8	1/8	1/2	1-1/2	.015	NC42102	NC42102T	NC42102A	NC44102	NC44102T	NC44102A
1/8	1/8	1/2	1-1/2	.020	NC42103	NC42103T	NC42103A	NC44103	NC44103T	NC44103A
3/16	3/16	5/8	2	.015	NC42104	NC42104T	NC42104A	NC44104	NC44104T	NC44104A
3/16	3/16	5/8	2	.020	NC42105	NC42105T	NC42105A	NC44105	NC44105T	NC44105A
3/16	3/16	5/8	2	.030	NC42106	NC42106T	NC42106A	NC44106	NC44106T	NC44106A
3/16	3/16	5/8	2	.060	NC42101	NC42101T	NC42101A	NC44101	NC44101T	NC44101A
1/4	1/4	3/4	2-1/2	.015	NC42107	NC42107T	NC42107A	NC44107	NC44107T	NC44107A
1/4	1/4	3/4	2-1/2	.020	NC42108	NC42108T	NC42108A	NC44108	NC44108T	NC44108A
1/4	1/4	3/4	2-1/2	.030	NC42109	NC42109T	NC42109A	NC44109	NC44109T	NC44109A
1/4	1/4	3/4	2-1/2	.045	NC42110	NC42110T	NC42110A	NC44110	NC44110T	NC44110A
1/4	1/4	3/4	2-1/2	.060	NC42148	NC42148T	NC42148A	NC44148	NC44148T	NC44148A
1/4	1/4	3/4	2-1/2	.090	NC42149	NC42149T	NC42149A	NC44149	NC44149T	NC44149A
5/16	5/16	7/8	2-1/2	.015	NC42111	NC42111T	NC42111A	NC44111	NC44111T	NC44111A
5/16	5/16	7/8	2-1/2	.020	NC42112	NC42112T	NC42112A	NC44112	NC44112T	NC44112A
5/16	5/16	7/8	2-1/2	.030	NC42113	NC42113T	NC42113A	NC44113	NC44113T	NC44113A
5/16	5/16	7/8	2-1/2	.045	NC42114	NC42114T	NC42114A	NC44114	NC44114T	NC44114A
5/16	5/16	7/8	2-1/2	.060	NC42150	NC42150T	NC42150A	NC44150	NC44150T	NC44150A
5/16	5/16	7/8	2-1/2	.090	NC42151	NC42151T	NC42151A	NC44151	NC44151T	NC44151A
3/8	3/8	7/8	2-1/2	.015	NC42115	NC42115T	NC42115A	NC44115	NC44115T	NC44115A
3/8	3/8	7/8	2-1/2	.020	NC42116	NC42116T	NC42116A	NC44116	NC44116T	NC44116A
3/8	3/8	7/8	2-1/2	.030	NC42117	NC42117T	NC42117A	NC44117	NC44117T	NC44117A
3/8	3/8	7/8	2-1/2	.045	NC42118	NC42118T	NC42118A	NC44118	NC44118T	NC44118A
3/8	3/8	7/8	2-1/2	.060	NC42119	NC42119T	NC42119A	NC44119	NC44119T	NC44119A
3/8	3/8	7/8	2-1/2	.090	NC42152	NC42152T	NC42152A	NC44152	NC44152T	NC44152A

Available with weldon flats

(continued on next page)



ENDMILL^{360°}

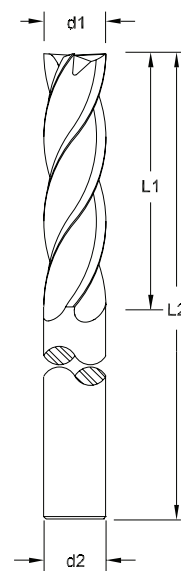
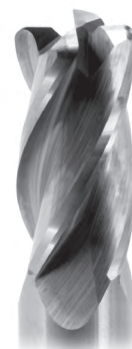
cutting tool technologies

GENERAL PURPOSE END MILLS

2 and 4 Flute, 30 Degree Helix, Center Cutting
Solid Carbide End Mills

2 & 4 FLUTE -STANDARD LENGTH - CORNER RADIUS *(continued)*

CUTTING DIAMETER (d1)	SHANK DIAMETER (d2)	LENGTH OF CUT (L1)	OVERALL LENGTH (L2)	RADIUS SIZE	2 FLUTE			4 FLUTE		
					UNCOATED	TiCN	ALTiN	UNCOATED	TiCN	ALTiN
1/2	1/2	1	3	.015	NC42120	NC42120T	NC42120A	NC44120	NC44120T	NC44120A
1/2	1/2	1	3	.020	NC42121	NC42121T	NC42121A	NC44121	NC44121T	NC44121A
1/2	1/2	1	3	.030	NC42122	NC42122T	NC42122A	NC44122	NC44122T	NC44122A
1/2	1/2	1	3	.045	NC42123	NC42123T	NC42123A	NC44123	NC44123T	NC44123A
1/2	1/2	1	3	.060	NC42124	NC42124T	NC42124A	NC44124	NC44124T	NC44124A
1/2	1/2	1	3	.090	NC42125	NC42125T	NC42125A	NC44125	NC44125T	NC44125A
1/2	1/2	1	3	.125	NC42126	NC42126T	NC42126A	NC44126	NC44126T	NC44126A
5/8	5/8	1-1/4	3-1/2	.015	NC42127	NC42127T	NC42127A	NC44127	NC44127T	NC44127A
5/8	5/8	1-1/4	3-1/2	.020	NC42128	NC42128T	NC42128A	NC44128	NC44128T	NC44128A
5/8	5/8	1-1/4	3-1/2	.030	NC42129	NC42129T	NC42129A	NC44129	NC44129T	NC44129A
5/8	5/8	1-1/4	3-1/2	.045	NC42130	NC42130T	NC42130A	NC44130	NC44130T	NC44130A
5/8	5/8	1-1/4	3-1/2	.060	NC42131	NC42131T	NC42131A	NC44131	NC44131T	NC44131A
5/8	5/8	1-1/4	3-1/2	.090	NC42132	NC42132T	NC42132A	NC44132	NC44132T	NC44132A
3/4	3/4	1-1/2	4	.015	NC42133	NC42133T	NC42133A	NC44133	NC44133T	NC44133A
3/4	3/4	1-1/2	4	.020	NC42134	NC42134T	NC42134A	NC44134	NC44134T	NC44134A
3/4	3/4	1-1/2	4	.030	NC42135	NC42135T	NC42135A	NC44135	NC44135T	NC44135A
3/4	3/4	1-1/2	4	.045	NC42136	NC42136T	NC42136A	NC44136	NC44136T	NC44136A
3/4	3/4	1-1/2	4	.060	NC42138	NC42138T	NC42138A	NC44138	NC44138T	NC44138A
3/4	3/4	1-1/2	4	.090	NC42139	NC42139T	NC42139A	NC44139	NC44139T	NC44139A
3/4	3/4	1-1/2	4	.125	NC42140	NC42140T	NC42140A	NC44140	NC44140T	NC44140A
1	1	1-1/2	4	.015	NC42141	NC42141T	NC42141A	NC44141	NC44141T	NC44141A
1	1	1-1/2	4	.020	NC42142	NC42142T	NC42142A	NC44142	NC44142T	NC44142A
1	1	1-1/2	4	.030	NC42143	NC42143T	NC42143A	NC44143	NC44143T	NC44143A
1	1	1-1/2	4	.045	NC42144	NC42144T	NC42144A	NC44144	NC44144T	NC44144A
1	1	1-1/2	4	.060	NC42145	NC42145T	NC42145A	NC44145	NC44145T	NC44145A
1	1	1-1/2	4	.090	NC42146	NC42146T	NC42146A	NC44146	NC44146T	NC44146A
1	1	1-1/2	4	.125	NC42147	NC42147T	NC42147A	NC44147	NC44147T	NC44147A



SLOTting
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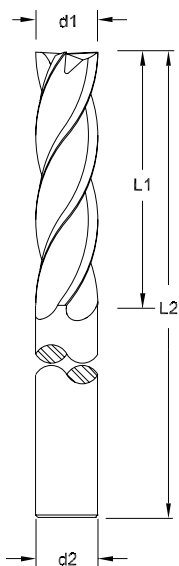
Available with weldon flats



GENERAL PURPOSE END MILLS

2 and 4 Flute, 30 Degree Helix, Center Cutting
Solid Carbide End Mills

2 & 4 FLUTE - EXTRA LENGTH - SQUARE



CUTTING DIAMETER (d1)	SHANK DIAMETER (d2)	LENGTH OF CUT (L1)	OVERALL LENGTH (L2)	2 FLUTE			4 FLUTE		
				UNCOATED	TiCN	AlTiN	UNCOATED	TiCN	AlTiN
1/8	1/8	5/8	2	NC72002	NC72002T	NC72002A	NC74002	NC74002T	NC74002A
1/8	1/8	3/4	3	NC72004	NC72004T	NC72004A	NC74004	NC74004T	NC74004A
1/8	1/8	1	3	NC72006	NC72006T	NC72006A	NC74006	NC74006T	NC74006A
3/16	3/16	1	3	NC72008	NC72008T	NC72008A	NC74008	NC74008T	NC74008A
3/16	3/16	1-1/8	3	NC72010	NC72010T	NC72010A	NC74010	NC74010T	NC74010A
3/16	3/16	1	4	NC72012	NC72012T	NC72012A	NC74012	NC74012T	NC74012A
1/4	1/4	1	3	NC72014	NC72014T	NC72014A	NC74014	NC74014T	NC74014A
1/4	1/4	1	4	NC72016	NC72016T	NC72016A	NC74016	NC74016T	NC74016A
1/4	1/4	1-1/2	4	NC72018	NC72018T	NC72018A	NC74018	NC74018T	NC74018A
1/4	1/4	1-1/2	6	NC72020	NC72020T	NC72020A	NC74020	NC74020T	NC74020A
5/16	5/16	1	3	NC72022	NC72022T	NC72022A	NC74022	NC74022T	NC74022A
5/16	5/16	1	4	NC72024	NC72024T	NC72024A	NC74024	NC74024T	NC74024A
5/16	5/16	1-5/8	4	NC72026	NC72026T	NC72026A	NC74026	NC74026T	NC74026A
5/16	5/16	1-1/2	6	NC72028	NC72028T	NC72028A	NC74028	NC74028T	NC74028A
3/8	3/8	1	3	NC72030	NC72030T	NC72030A	NC74030	NC74030T	NC74030A
3/8	3/8	1	4	NC72032	NC72032T	NC72032A	NC74032	NC74032T	NC74032A
3/8	3/8	2	4	NC72034	NC72034T	NC72034A	NC74034	NC74034T	NC74034A
3/8	3/8	1-1/2	6	NC72036	NC72036T	NC72036A	NC74036	NC74036T	NC74036A
3/8	3/8	3	6	NC72038	NC72038T	NC72038A	NC74038	NC74038T	NC74038A

Available with weldon flats

(continued on next page)

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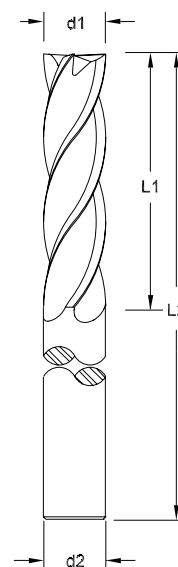
GENERAL PURPOSE END MILLS

2 and 4 Flute, 30 Degree Helix, Center Cutting
Solid Carbide End Mills

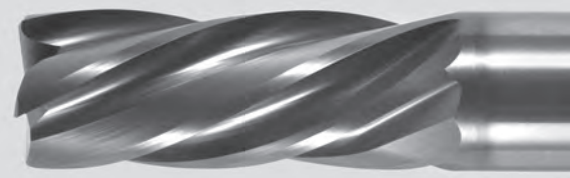
2 & 4 FLUTE - EXTRA LENGTH - SQUARE (continued)

CUTTING DIAMETER (d1)	SHANK DIAMETER (d2)	LENGTH OF CUT (L1)	OVERALL LENGTH (L2)	2 FLUTE			4 FLUTE		
				UNCOATED	TiCN	AlTiN	UNCOATED	TiCN	AlTiN
7/16	7/16	1	4	NC72040	NC72040T	NC72040A	NC74040	NC74040T	NC74040A
7/16	7/16	2	4	NC72042	NC72042T	NC72042A	NC74042	NC74042T	NC74042A
7/16	7/16	1-1/2	6	NC72044	NC72044T	NC72044A	NC74044	NC74044T	NC74044A
7/16	7/16	3	6	NC72046	NC72046T	NC72046A	NC74046	NC74046T	NC74046A
1/2	1/2	1	4	NC72048	NC72048T	NC72048A	NC74048	NC74048T	NC74048A
1/2	1/2	2	4	NC72050	NC72050T	NC72050A	NC74050	NC74050T	NC74050A
1/2	1/2	1-1/2	6	NC72052	NC72052T	NC72052A	NC74052	NC74052T	NC74052A
1/2	1/2	3	6	NC72054	NC72054T	NC72054A	NC74054	NC74054T	NC74054A
1/2	1/2	4	6	NC72056	NC72056T	NC72056A	NC74056	NC74056T	NC74056A
9/16	9/16	2	6	NC72058	NC72058T	NC72058A	NC74058	NC74058T	NC74058A
9/16	9/16	3	6	NC72060	NC72060T	NC72060A	NC74060	NC74060T	NC74060A
5/8	5/8	2	6	NC72064	NC72064T	NC72064A	NC74064	NC74064T	NC74064A
5/8	5/8	3	6	NC72066	NC72066T	NC72066A	NC74066	NC74066T	NC74066A
5/8	5/8	4	6	NC72067	NC72067T	NC72067A	NC74067	NC74067T	NC74067A
3/4	3/4	2-1/4	5	NC72068	NC72068T	NC72068A	NC74068	NC74068T	NC74068A
3/4	3/4	2	6	NC72070	NC72070T	NC72070A	NC74070	NC74070T	NC74070A
3/4	3/4	3	6	NC72072	NC72072T	NC72072A	NC74072	NC74072T	NC74072A
3/4	3/4	4	6-1/2	NC72073	NC72073T	NC72073A	NC74073	NC74073T	NC74073A
1	1	2-1/4	5	NC72074	NC72074T	NC72074A	NC74074	NC74074T	NC74074A
1	1	2	6	NC72076	NC72076T	NC72076A	NC74076	NC74076T	NC74076A
1	1	3	6	NC72078	NC72078T	NC72078A	NC74078	NC74078T	NC74078A
1	1	4-1/8	7	NC72080	NC72080T	NC72080A	NC74080	NC74080T	NC74080A

Available with weldon flats



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GENERAL PURPOSE END MILLS

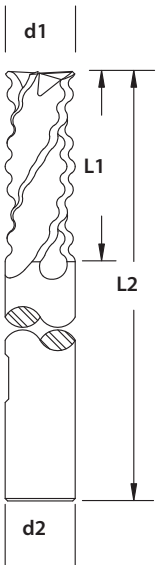
4 Flute, 30 Degree Helix, Center Cutting
Solid Carbide End Mills



4 FLUTE - ROUGHERS

CUTTING DIAMETER (d1)	SHANK DIAMETER (d2)	LENGTH OF CUT (L1)	OVERALL LENGTH (L2)	4 FLUTE	
				UNCOATED	ALTiN
1/4	1/4	3/4	2-1/2	NCR4016	NCR4016A
5/16	5/16	13/16	2-1/2	NCR4020	NCR4020A
3/8	3/8	7/8	2-1/2	NCR4024	NCR4024A
7/16	7/16	1	2-3/4	NCR4028	NCR4028A
1/2	1/2	1	3	NCR4032	NCR4032A
5/8	5/8	1-1/4	3-1/2	NCR4034	NCR4034A
3/4	3/4	1-1/2	4	NCR4036	NCR4036A
1	1	2	4	NCR4040	NCR4040A

Available with weldon flats



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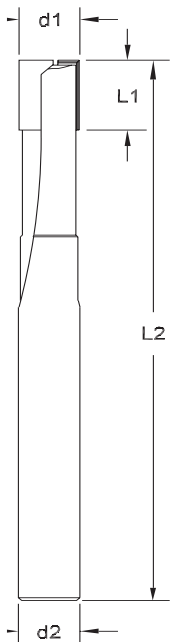




PCD END MILLS

1 & 2 Flute, Straight, Center Cutting Solid Carbide Body

The solution for your most challenging non-ferrous milling applications.
Abrasive plastics, graphite, carbon fiber materials,
composites, aluminum, copper, brass, bronze etc.



CUTTING DIAMETER (d1)	SHANK DIAMETER (d2)	LENGTH OF CUT (L1)	OVERALL LENGTH (L2)	RADIUS	FLUTES	EDP
SQUARE						
3/32	1/8	3/16	1-1/2		1	PCD1006
1/8	1/8	1/4	1-1/2		1	PCD1008
3/16	3/16	1/4	2		2	PCD1012
1/4	1/4	1/4	2-1/2		2	PCD1016
3/8	3/8	1/4	2-1/2		2	PCD1024
1/2	1/2	1/4	3		2	PCD1032
5/8	5/8	3/8	3-1/2		2	PCD1034
3/4	3/4	3/8	4		2	PCD1036
CORNER RADIUS						
3/32	1/8	3/16	1-1/2	.010	1	PCD1106
1/8	1/8	1/4	1-1/2	.015	1	PCD1108
3/16	3/16	1/4	2	.015	2	PCD1112
1/4	1/4	1/4	2-1/2	.030	2	PCD1116
3/8	3/8	1/4	2-1/2	.030	2	PCD1124
1/2	1/2	1/4	3	.030	2	PCD1132
BALL						
3/32	1/8	3/16	1-1/2		1	PCD1206
1/8	1/8	1/4	1-1/2		1	PCD1208
3/16	3/16	1/4	2		2	PCD1212
1/4	1/4	1/4	2-1/2		2	PCD1216
3/8	3/8	1/4	2-1/2		2	PCD1224
1/2	1/2	1/4	3		2	PCD1232

Available with weldon flats

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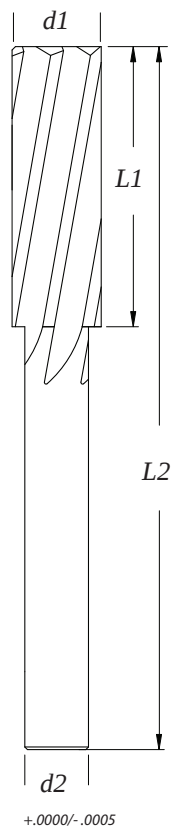
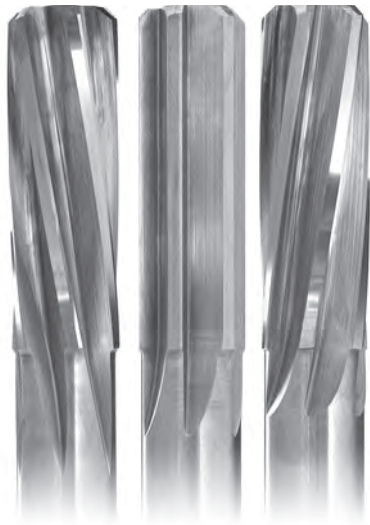
SOLID CARBIDE CHUCKING REAMERS

SERIES 250 STRAIGHT FLUTE/RHC

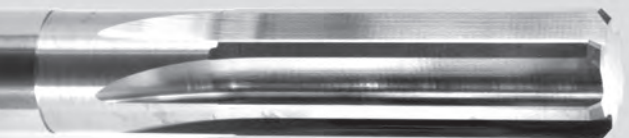
SERIES 260 RHS/RHC

SERIES 270 LHS/RHC

24-hour Service
Including Metric Sizes



REAMER RANGE (d1)	LENGTH OF FLUTE (L1)	SHANK DIAMETER (d2)	OVERALL LENGTH (L2)	No. OF FLUTES
.0351-.040	0.250	0.030	1.500	4
.0401-.045	0.375	0.037	1.500	4
.0451-.050	0.375	0.042	1.500	4
.0501-.057	0.375	0.046	1.500	4
.0571-.065	0.375	0.053	1.500	4
.0651-.080	0.500	0.060	1.750	4
.0801-.095	0.500	0.075	2.000	4
.0951-.115	0.625	0.090	2.250	4
.1151-.130	0.625	0.110	2.250	4
.1301-.145	0.750	0.125	2.500	4
.1451-.160	0.750	0.140	2.500	4
.1601-.175	0.875	0.155	2.750	4
.1751-.195	0.875	0.170	2.750	4
.1951-.210	1.000	0.188	3.000	4
.2101-.225	1.000	0.205	3.000	4
.2251-.240	1.000	0.220	3.000	4
.2401-.255	1.000	0.235	3.000	4
.2551-.275	1.125	0.250	3.250	6
.2751-.295	1.125	0.270	3.250	6
.2951-.315	1.125	0.290	3.250	6
.3151-.335	1.250	0.313	3.500	6
.3351-.355	1.250	0.330	3.500	6
.3551-.380	1.250	0.350	3.500	6
.3801-.410	1.250	0.375	4.000	6
.4101-.440	1.375	0.405	4.000	6
.4401-.470	1.375	0.438	4.000	6
.4701-.505	1.500	0.465	4.000	6
.5051-.540	1.500	0.500	4.500	6
.5401-.580	1.500	0.535	4.500	6
.5801-.620	1.750	0.575	4.500	6
.6201-.660	1.750	0.615	4.500	6
.6601-.705	2.000	0.655	5.000	6
.7051-.755	2.000	0.700	5.000	6
.7551-.795	2.000	0.750	5.000	6
.7951-.845	2.250	0.750	5.000	6
.8451-.900	2.250	0.750	5.000	6
.9001-.960	2.250	0.875	5.000	8
.9601-1.025	2.250	0.875	5.000	8



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SOLID CARBIDE LONG CHUCKING REAMERS

SERIES 450 - STRAIGHT FLUTE, RHC

SERIES 460 - RHS/RHC

SERIES 470 - LHS/RHC

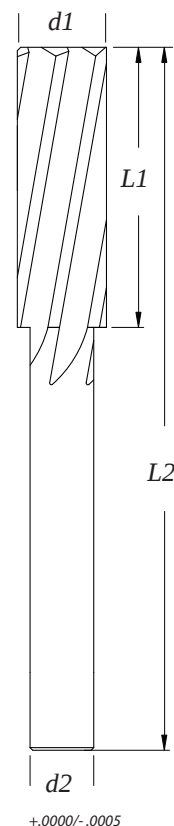
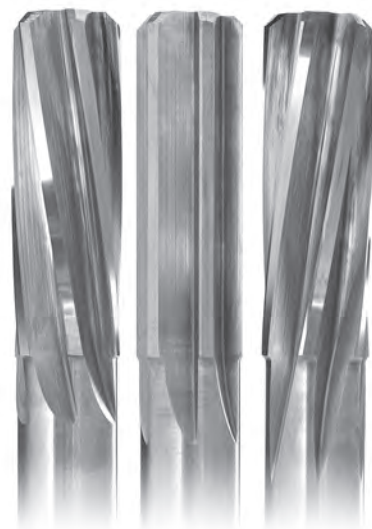
Solid carbide for diameters up to .1950

Carbide head, steel shank for diameters .1951+

24-hour Service

Including Metric Sizes

REAMER RANGE (d1)	LENGTH OF FLUTE (L1)	SHANK DIAMETER (d2)	OVERALL LENGTH (L2)	NO. OF FLUTES
.0501-.057	0.625	0.046	2.500	4
.0571-.065	0.625	0.053	2.500	4
.0651-.080	0.750	0.060	2.750	4
.0801-.095	0.750	0.075	3.000	4
.0951-.115	0.875	0.090	3.500	4
.1151-.130	0.875	0.110	3.500	4
.1301-.145	0.875	0.125	4.000	4
.1451-.160	1.000	0.140	4.000	4
.1601-.175	1.000	0.155	4.500	4
.1751-.195	1.125	0.170	4.500	4
.1951-.210	1.250	0.188	5.000	4
.2101-.225	1.250	0.205	5.000	4
.2251-.240	1.250	0.220	6.000	4
.2401-.255	1.250	0.235	6.000	6
.2551-.275	1.375	0.250	6.000	6
.2751-.295	1.375	0.270	6.000	6
.2951-.315	1.375	0.290	6.000	6
.3151-.335	1.500	0.313	6.000	6
.3351-.355	1.500	0.330	6.000	6
.3551-.380	1.500	0.350	7.000	6
.3801-.410	1.750	0.375	7.000	6
.4101-.440	1.750	0.405	7.000	6
.4401-.470	1.750	0.438	8.000	6
.4701-.505	1.750	0.465	8.000	6
.5051-.540	2.000	0.500	8.000	6
.5401-.580	2.000	0.535	8.000	6
.5801-.620	2.000	0.575	9.000	6
.6201-.660	2.000	0.615	9.000	6
.6601-.705	2.250	0.655	9.000	6
.7051-.755	2.250	0.700	9.500	6
.7551-.795	2.250	0.750	9.500	6
.7951-.845	2.500	0.750	9.500	6
.8451-.900	2.625	0.750	10.000	6
.9001-.960	2.625	0.875	10.000	8
.9601-1.025	2.750	0.875	10.000	8





SOLID CARBIDE SCREW MACHINE REAMERS

SERIES 350 STRAIGHT FLUTE/RHC

SERIES 360 RHS/RHC

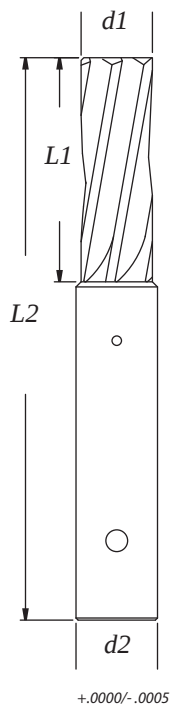
SERIES 370 LHS/RHC

48-hour Service
Including Metric Sizes

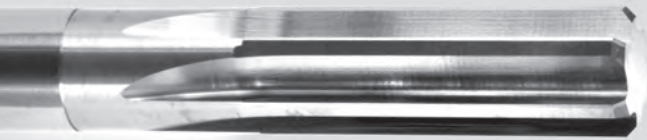
Supplied with carbide head,
steel shanks and pin holes



d1 .0600 - .2550 : +.0002/-0.0000
d1 .2551 - .5100 : +.0003/-0.0000



REAMER RANGE (d1)	LENGTH OF FLUTE (L1)	SHANK DIAMETER (d2)	OVERALL LENGTH (L2)	NO. OF FLUTES	PIN HOLE SIZE
.0600-.0700	1/8	1/2	1-3/4	4	1/16
.0701-.0950	1/8	1/2	1-3/4	4	1/16
.0951-.1150	1/4	3/4	2-1/8	4	3/32
.1151-.1300	1/4	3/4	2-1/8	4	3/32
.1301-.1600	1/4	7/8	2-1/4	4	3/32
.1601-.1900	1/4	7/8	2-1/4	4	3/32
.1901-.2200	3/8	7/8	2-3/8	4	1/8
.2201-.2550	3/8	7/8	2-3/8	4	1/8
.2551-.2850	3/8	1	2-1/2	6	1/8
.2851-.3200	3/8	1	2-1/2	6	1/8
.3201-.3500	1/2	1-1/4	2-11/16	6	1/2
.3501-.3800	1/2	1-1/4	2-11/16	6	1/2
.3801-.4100	1/2	1-1/8	2-11/16	6	3/16
.4101-.4400	1/2	1-1/8	2-11/16	6	3/16
.4401-.4750	5/8	1-3/8	2-11/16	6	1/4
.4751-.5100	5/8	1-3/8	2-11/16	6	1/4

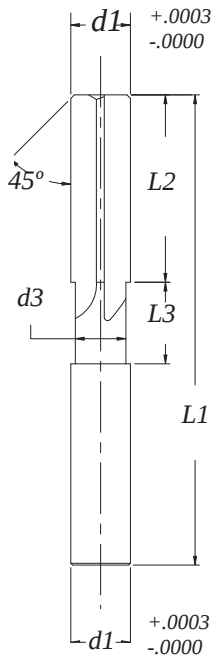


5250 SERIES SOLID CARBIDE REAMERS

Straight flute, RHC

All Series 5250 Reamers are supplied with standard 45 ° chamfer

Series 5250 includes number sizes, letter sizes, fractional sizes, metric sizes and decimal sizes, including over/under sizes



ORDER #	SIZE ($d1$)	LENGTH OF FLUTE ($L2$)	OVERALL LENGTH ($L1$)
5250-0400 thru -0670	.0400-.0670	.375	1.50
5250-0680 thru -0787	.0680-.0787	.500	1.75
5250-0790 thru -0950	.0790-.0950	.500	2.00
5250-0960 thru -1290	.0960-.1290	.625	2.25
5250-1300 thru -1590	.1300-.1590	.750	2.50
5250-1600 thru -1910	.1600-.1910	.875	2.75
5250-1920 thru -2660	.1920-.2660	1.000	3.00
5250-2670 thru -3430	.2670-.3430	1.125	3.25
5250-3438 thru -4000	.3438-.4000	1.250	3.50
5250-4010 thru -4690	.4010-.4690	1.375	4.00
5250-4700 thru -5020	.4700-.5020	1.500	4.00

Neck Diameter

$d1$.0400-.0500: $d3$.005 under $d1$
 $d1$.0510-.5020: $d3$.010 under $d1$

Neck Length

$d1$.0400-.0670 – $L3$.250
 $d1$.0680-.0980 – $L3$.375
 $d1$.0990-.1590 – $L3$.500
 $d1$.1600-.2710 – $L3$.625
 $d1$.2720-.5020 – $L3$.750

Number of flutes

$d1$.0400-.2540 - 4 flutes
 $d1$.2550-.5020 - 6 flutes

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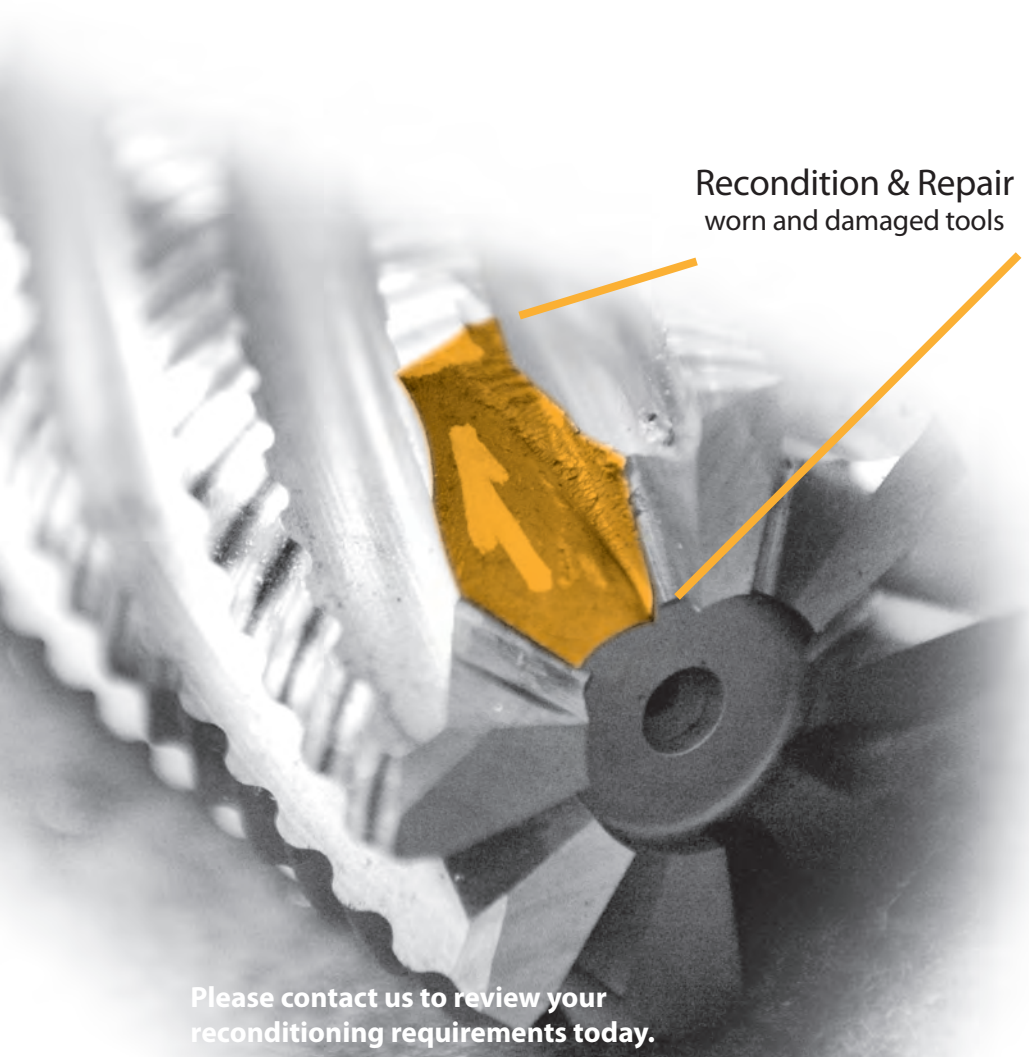
RECON360⁰

CONTOUR360⁰ is highly regarded and widely known for its cutting tool reconditioning service. We are very interested in extending your tool life and, in many cases, improving tool performance above and beyond its original capability.

CONTOUR360⁰ can recondition the cutting edges or completely remanufacture the geometry to your specifications. Our reconditioning service extends to tools manufactured by CONTOUR360⁰, as well as tools from other manufacturers. We offer an extensive list of PVD coating options for reconditioned tools.



Recondition & Repair
worn and damaged tools



Please contact us to review your reconditioning requirements today.

SPEED AND FEED CHARTS

SFM & FPT RECOMMENDATIONS*

HIGH PERFORMANCE END MILLS

UNDER 32 HRC SOFT GRADE MATERIALS

MATERIAL	SFM	1/8"	3/16"	1/4"	3/8"	1/2"	5/8"	3/4"	1"
NON-FERROUS MATERIALS									
Aluminum Alloys 2024-T4/T6, 2014, 6061-T6/T651, 7075-T6	800-2000	0.001	0.002	0.003	0.004-0.006	0.009-0.012	0.011-0.014	0.013-0.016	0.015-0.018
Magnesium Die-Cast, Extruded	800-1500	0.001	0.0015	0.002	0.003-0.004	0.004-0.005	0.006-0.007	0.008-0.009	0.009-0.010
Copper Yellow Brass, High Lead Brass, Red Brass	800-1000	0.001	0.0012	0.002	0.0025	0.003	0.004	0.004	0.005
Copper Alloys Aluminum/Bronze, Low Silicon Bronze	800-1000	0.001	0.0012	0.002	0.0025	0.003	0.004	0.004	0.005
Plastics, Acrylics, Phenolics Polysulfone, G10, G11	200-500	0.001	0.002	0.003	0.004	0.006	0.008	0.01	0.012
Carbon, Graphites Carbon, Graphites	200-500	0.002	0.003	0.004	0.006	0.008	0.009	0.01	0.012
STAINLESS STEELS									
Precipitation 13/8, 15/5, AM-350/355	270-550	0.0003	0.0005	0.001	0.0013	0.002	0.003	0.004	0.005
Austenitic 200 Series, 302, 303, 304L, 316L	270-550	0.0002	0.0003	0.0005	0.001	0.002	0.0025	0.0035	0.0045
Martensitic 403, 410, 416	270-550	0.0002	0.0003	0.0005	0.001	0.0015	0.0025	0.003	0.004
HIGH TEMP ALLOYS									
Cobalt Base Stellite, HS-21, Haynes 25/188, X-40, L-605	80-110	0.0005	0.0006	0.001	0.0013	0.0015	0.002	0.0025	0.003
Nickel Base Inconel 600/625, Nickel 200-270, Invar, Monel 400-405, K- Monel, PermaNickel 300, Incoloy 600-800, MAR-M-246/247	80-110	0.0005	0.0006	0.001	0.0013	0.0015	0.002	0.0025	0.003
Iron Base Incoloy 800-802, Multimet N-155, Timken 16-26-6	80-110	0.0005	0.0006	0.001	0.0013	0.0015	0.002	0.0025	0.003
STEELS									
High Strength Steels 4140, 4340, 6150, 52100, H-11, H-13	100-350	0.0008	0.001	0.0015	0.0024	0.0031	0.004	0.005	0.006
High Alloy Steels - Mold & Die A-2/6/10, O1, O1, O6, D2, H-13	100-350	0.0008	0.001	0.0015	0.0024	0.0031	0.004	0.005	0.006
Medium Alloy Steels 200, 250, 300	300-600	0.0008	0.001	0.0015	0.0024	0.0031	0.004	0.005	0.006
Low Alloy Steels - Maraging 10XX, 11XX, 13XX	300-600	0.0008	0.001	0.0015	0.0024	0.0031	0.004	0.005	0.006
CAST IRONS									
Ductile Iron Ductile Cast Iron	300-500	0.001	0.0012	0.0019	0.003	0.0036	0.004	0.004	0.006
Cast Iron Gray Cast Iron	300-500	0.001	0.0012	0.002	0.003	0.004	0.005	0.006	0.008
TITANIUM									
Titanium Alloys Commercially Pure, 6AL-4V, ASTM 1/2/3, 6AL-2SN-4Zr-2Mo-Si	270-550	0.0007	0.001	0.0015	0.0018	0.0027	0.003	0.0036	0.004

RPM = 3.82 x SFM / Diameter

SFM = .262 x RPM x Diameter

IPM = FPT x Number Teeth x RPM

FPT = IPM / Number Teeth x RPM

FPR = FPT x Number Teeth

*BASELINE RECOMMENDATIONS. YOUR APPLICATION MAY REQUIRE ADJUSTMENTS. FOR TECHNICAL SUPPORT PLEASE CALL 800-543-4544

SPEED AND FEED CHARTS

SFM & FPT RECOMMENDATIONS*

HIGH PERFORMANCE END MILLS

OVER 32 HRC HARD GRADE MATERIALS

MATERIAL	SFM	1/8"	3/16"	1/4"	3/8"	1/2"	5/8"	3/4"	1"
NON-FERROUS MATERIALS									
Aluminum Alloys 440, 356, 380, C61300	500-1000	0.001	0.0015	0.002	0.003	0.004	0.005	0.006	0.008
Copper Naval Brass, High Silicon Bronze, A17, C-17200	800-1000	0.001	0.0015	0.002	0.0025	0.003	0.004	0.0045	0.005
Copper Alloys Nickel Silver, Beryllium Copper, Oxygen-Free Copper	800-1000	0.001	0.0015	0.002	0.0025	0.003	0.0047	0.004	0.005
Plastics Polycarbonate	200-500	0.001	0.002	0.003	0.004	0.006	0.008	0.010	0.012
STAINLESS STEELS									
Precipitation 17/4, 17/7, AF-71, Custom 450/635, 15/7MO	270-550	0.0003	0.0005	0.001	0.0013	0.002	0.003	0.004	0.005
Austenitic 304, 310, 314, 316, 321, 330, 347, 348	270-550	0.0002	0.0003	0.0005	0.001	0.002	0.0025	0.0035	0.004
Martensitic 420, 430F, 440C, 446	270-550	0.0002	0.0003	0.0005	0.001	0.0015	0.0025	0.0025	0.004
HIGH TEMP ALLOYS									
Cobalt Base Air-Resist 13/213/215, Haynes 21/36, Howmet 3, Hs 6/51, NASA Co-W-Re, Mar-M-302, MP-159	80-110	0.0005	0.0006	0.001	0.0013	0.0015	0.002	0.0025	0.003
Nickel Base Hastelloy-C/B/G/X, Inconel 718, Waspaloy, M252, Rene 41-95, Nimonic 75-80, Astroloy, Udimet 500-700	80-110	0.0005	0.0006	0.001	0.0013	0.0015	0.002	0.0025	0.003
Iron Base IA286, Haynes 556, Discoloy, V-57	80-110	0.0005	0.0006	0.001	0.0013	0.0015	0.002	0.0025	0.003
STEELS									
High Strength Steels 4140, 4340M, EDT-150, HP9-430, 11-10, 300M, D6Ac, H11, H13, Armor Plate	100-350	0.0008	0.001	0.0015	0.0024	0.0031	0.004	0.005	0.006
High Alloy Steels - Mold & Die Hy-Tugg, Stressproof, Armor Plate	100-350	0.0008	0.001	0.0015	0.0024	0.0031	0.004	0.005	0.006
Medium Alloy Steels 200, 250, 300	100-350	0.0008	0.001	0.0015	0.0024	0.0031	0.004	0.005	0.006
Low Alloy Steels - Maraging 23XX, 31XX	100-350	0.0008	0.001	0.0015	0.0024	0.0031	0.004	0.005	0.006
CAST IRONS									
Ductile Iron Ductile Cast Iron	300-500	0.001	0.0012	0.0019	0.003	0.0036	0.004	0.004	0.006
Cast Iron Malleable, Chilled	300-500	0.001	0.0012	0.0019	0.003	0.0036	0.004	0.004	0.006
TITANIUM									
Titanium Alloys 5AL-2.5-Sn-Eli, 8AL-1 Mo-1V	270-550	0.0007	0.001	0.0015	0.0018	0.0027	0.003	0.0036	0.004

RPM = 3.82 x SFM / Diameter

IPM = FPT x Number Teeth x RPM

FPT = IPM / Number Teeth x RPM

FPR = FPT x Number Teeth

SFM = .262 x RPM x Diameter

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SPEED AND FEED CHARTS

SFM & FPT RECOMMENDATIONS*

GENERAL PURPOSE 4-FLUTE END MILLS

Work	Type of Cut	AXIAL DOC	RADIAL DOC	SPEED (SFM)		FEED (INCHES PER TOOTH)						SPEED (M/MIN)						FEED (MM PER TOOTH)					
				No Coat	TiCN	AlTiN	1/8	1/4	3/8	1/2	5/8	3/4	1	No Coat	TiCN	AlTiN	3.0	6.0	9.0	12.0	16.0	19.0	25.0
Composites, Plastics	Slot	.5 x D	1 x D	300	350	350	.0008	.0015	.0022	.0030	.0037	.0047	.0060	91	107	107	.0203	.0381	.0559	.0762	.0940	.1194	.1524
	Rough	1 x D	.5 x D	375	450	450	.0009	.0018	.0027	.0035	.0045	.0055	.0070	114	137	137	.0229	.0457	.0686	.0889	.1143	.1397	.1778
	Finish	1.5 x D	.01 x D	450	650	650	.0009	.0018	.0027	.0035	.0045	.0055	.0070	137	198	198	.0229	.0457	.0686	.0889	.1143	.1397	.1778
Graphite	Slot	.5 x D	1 x D	350	400	450	.0008	.0015	.0023	.0030	.0037	.0045	.0060	107	122	137	.0203	.0381	.0584	.0762	.0940	.1143	.1524
	Rough	1 x D	.5 x D	425	475	525	.0009	.0017	.0026	.0035	.0043	.0053	.0070	130	145	160	.0229	.0432	.0660	.0889	.1092	.1346	.1778
	Finish	1.5 x D	.01 x D	500	550	600	.0010	.0019	.0028	.0038	.0047	.0057	.0076	152	168	183	.0254	.0483	.0711	.0965	.1194	.1448	.1930
Cast Iron - Gray	Slot	.5 x D	1 x D	200	350	350	.0004	.0007	.0011	.0015	.0019	.0023	.0030	61	107	107	.0102	.0178	.0279	.0381	.0483	.0584	.0762
	Rough	1 x D	.5 x D	250	400	400	.0005	.0010	.0015	.0020	.0025	.0030	.0040	76	122	122	.0127	.0254	.0381	.0508	.0635	.0762	.1016
	Finish	1.5 x D	.01 x D	300	450	450	.0007	.0015	.0022	.0030	.0038	.0045	.0060	91	137	137	.0178	.0381	.0559	.0762	.0965	.1143	.1524
Cast Iron - Ductile	Slot	.5 x D	1 x D	200	250	250	.0004	.0007	.0011	.0015	.0018	.0023	.0030	61	76	76	.0102	.0178	.0279	.0381	.0457	.0584	.0762
	Rough	1 x D	.5 x D	250	275	275	.0005	.0010	.0015	.0020	.0025	.0030	.0040	76	84	84	.0127	.0254	.0381	.0508	.0635	.0762	.1016
	Finish	1.5 x D	.01 x D	275	325	325	.0006	.0012	.0018	.0023	.0028	.0034	.0046	84	99	99	.0152	.0305	.0457	.0584	.0711	.0864	.1168
Low Carbon Steel ≤ 38 HRC 1018, 12L14, 8620	Slot	.5 x D	1 x D	250	275	300	.0005	.0010	.0015	.0020	.0025	.0030	.0040	76	84	91	.0127	.0254	.0381	.0508	.0635	.0762	.1016
	Rough	1 x D	.5 x D	275	300	325	.0006	.0012	.0018	.0025	.0031	.0037	.0050	84	91	99	.0152	.0305	.0457	.0635	.0787	.0940	.1270
	Finish	1.5 x D	.01 x D	300	325	350	.0007	.0015	.0022	.0030	.0038	.0045	.0060	91	99	107	.0178	.0381	.0559	.0762	.0965	.1143	.1524
Medium Carbon Steel ≤ 38 HRC 4140, 4340	Slot	.5 x D	1 x D	225	250	275	.0005	.0010	.0015	.0020	.0025	.0030	.0040	69	76	84	.0127	.0254	.0381	.0508	.0635	.0762	.1016
	Rough	1 x D	.5 x D	250	275	300	.0006	.0012	.0018	.0025	.0031	.0037	.0050	76	84	91	.0152	.0305	.0457	.0635	.0787	.0940	.1270
	Finish	1.5 x D	.01 x D	275	300	325	.0007	.0015	.0022	.0030	.0038	.0045	.0060	84	91	99	.0178	.0381	.0559	.0762	.0965	.1143	.1524
Tool & Die Steel ≤ 38 HRC A2, D2, H13, P20	Slot	.5 x D	1 x D	225	250	275	.0005	.0010	.0015	.0020	.0025	.0030	.0040	69	76	84	.0127	.0254	.0381	.0508	.0635	.0762	.1016
	Rough	1 x D	.5 x D	250	275	300	.0006	.0012	.0018	.0025	.0031	.0037	.0050	76	84	91	.0152	.0305	.0457	.0635	.0787	.0940	.1270
	Finish	1.5 x D	.01 x D	275	300	325	.0007	.0015	.0022	.0030	.0038	.0045	.0060	84	91	99	.0178	.0381	.0559	.0762	.0965	.1143	.1524
Tool & Die Steel 39 - 48 HRC A2, D2, H13, P20	Slot	.25 x D	1 x D	175	200	225	.0002	.0005	.0007	.0010	.0012	.0015	.0020	53	61	69	.0051	.0127	.0178	.0254	.0305	.0381	.0508
	Rough	1 x D	.25 x D	200	225	250	.0003	.0007	.0011	.0015	.0019	.0022	.0030	61	69	76	.0076	.0178	.0279	.0381	.0483	.0559	.0762
	Finish	1.5 x D	.01 x D	225	250	275	.0004	.0009	.0014	.0018	.0023	.0027	.0036	69	76	84	.0102	.0229	.0356	.0457	.0584	.0686	.0914
Easy to Machine Stainless Steel 416, 410, 302, 303	Slot	.5 x D	1 x D	200	250	250	.0003	.0007	.0011	.0015	.0019	.0023	.0030	61	76	76	.0076	.0178	.0279	.0381	.483	.0584	.0762
	Rough	1 x D	.5 x D	250	275	275	.0005	.0010	.0015	.0020	.0025	.0030	.0040	76	84	84	.0127	.0254	.0381	.0508	.0635	.0762	.1016
	Finish	1.5 x D	.01 x D	300	325	325	.0006	.0012	.0018	.0025	.0031	.0038	.0050	91	99	99	.0152	.0305	.0457	.0635	.0787	.0965	.1270
Moderate Machining Stainless Steel 304, 316, Invar, Kovar	Slot	.5 x D	1 x D	200	225	250	.0003	.0005	.0008	.0010	.0012	.0015	.0020	61	69	76	.0064	.0127	.0191	.0254	.0305	.0381	.0508
	Rough	1 x D	.5 x D	250	275	300	.0003	.0007	.0011	.0015	.0019	.0022	.0030	76	84	91	.0076	.0178	.0279	.0381	.0483	.0559	.0762
	Finish	1.5 x D	.01 x D	300	325	350	.0004	.0009	.0014	.0018	.0023	.0027	.0036	91	99	107	.0102	.0229	.0356	.0457	.0584	.0686	.0914

RPM = 3.82 x SFM / Diameter
SFM = .262 x RPM x Diameter
FPM = FPT x Number Teeth

IPM = FPT x Number Teeth x RPM
FPT = IPM / Number Teeth x RPM

D = Tool Diameter
Reduce feed rates by 20% when using long length tools
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